Table Talk (Table 17): AFV Market Sector -- Police

Fourth National Clean Cities Conference & Exposition

June 3, 1998

Discussion Leader: Paul Nelson, Vice President
Natural Fuels Corporation
303/322-4600

Presentation Outline:

Vehicle Applications:

- Ground Patrol (bikes, on-foot, horses)
- Cruisers (pursuit cars, motorcycles and SUVs)
- Detective (cars)
- Supervisors/Administration (cars)
- Prisoner Transport (vans, buses)
- Miscellaneous (SWAT trucks, etc.)

Vehicle Criteria:

- Reliability (i.e., it works when called upon)
- Acceleration
- Range
- Handling
- Fueling Convenience
- Characteristics of Operating Area (e.g., city, highway, rural)
- Level of service/training support
- Level of fleet commitment (i.e., to success)

Denver Experiences:

Fleet	# Vehicles	Technology	Dates	Comments
Denver Police Dept.	60	Propane Conversions	92-96	Deconverted
Denver Police Dept.	13	Ford Natural Gas Vics	96-	Working
Denver Police Dept.	5	ZAP EV Bikes	98-	Proposed
Denver Int'l Airport	3	Ford Natural Gas Vics	97-	Working
Denver Int'l Airport	10+	Suburban NG w/GFI & BT	97-	Working
City of Englewood	1	Chevy NG 5.7 w/GFI	97-98	Limited use
City of Lakewood	2	Chevy NG 5.7 w/DAI	96-	Deconverted
First Watch Security	12	Various NG w/ GFI & BT	95-	Working
Denver Burglar Alarm	5	Chrysler NG Ram Trucks	98-	Working

Contacts:

Denver Police Department: Sergeant Sam Singleton
Denver International Airport: Terry Henry
City of Englewood: Pat White
City of Lakewood: call Jeff Frasier at NFC
First Watch Security: Russell Foote
Denver Burglar Alarm: call Ken Manley at NFC

NATURAL® NGV INFORMATION FOR THE WEST News

APRIL 1997
VOLUME 2
NUMBER 3

Natural Gas Powers Police Vehicles

By Jeff Frasier, Market Manager

Sergeant Sam Singleton, fleet manager with the Denver Police Department (DPD), knows alternative fuel vehicles. In the early 1990s he orchestrated the conversion of 60 police cars to liquid petroleum gas (LPG). Today the DPD AFV fleet uses dedicated natural gas vehicles, which carry factory warranties.

Singleton, who suffered from asthma as a child, is happy to be involved in Denver's "Green Fleets" program. "Our fleet contributes a lot to air pollution. By going to clean-burning fuels we can have a significant impact on the brown cloud and benefit the community." DPD's Ford Crown Victorias are the cleanest vehicles in town and are certified as ultra-low emission vehicles (ULEV) and inherently low-emission vehicles (ILEV).

Last summer Singleton purchased five new Crown Vics to test with various precincts and supervisors. And when Budget Rent-A-Car began selling used 1996 Crown Vics in the fall, he purchased eight of them. He was very happy with the purchase price, noting that Natural Fuels helped to negotiate a great deal. In addition, the DPD took advantage of rebates offered by the Colorado Office of Energy Conservation, Public Service of Colorado, Colorado Interstate Gas and Total Petroleum.

Singleton understands the importance of support and buy-in for an NGV program. In fact, the first five Crown Vics were given to key department officials, including the chief of police, the public information officer, two district lieutenants and Singleton himself. Each fuels at NATURAL sites throughout the city.

From an operating standpoint, the NGVs have been reliable and required very little maintenance. Driving range is a concern, with drivers filling up every 100 miles, about 50 miles less than Singleton expected. NFC was able to resolve this problem by installing an extra cylinder that holds about four equivalent gallons.

Some drivers have voiced concern that the NGV Crown Vics are slower to "get off the line" (going from 0 to 20 miles per hour) and have overly sensitive steering. Singleton believes that if Ford increased the axle ratio to account for the added cylinder weight and upgraded the suspension on the NGVs, these issues would disappear.

Singleton soon will be working on a seven-year plan for the department fleet and will be ordering cars for next year. He stresses that he believes in NGVs and plans to keep them in his fleet. The vehicles work fine, he says, as long as they're placed in environments where drivers don't mind fueling more often and where high-performance is not mandatory, as is the case in vehicles used for administrative purposes. But the program's success will depend on the responsiveness of automakers, he says. "Ford has to do a better job of understanding our specific requirements and design an NGV that meets law enforcement standards." NFC encourages other law enforcement fleets to call Ford and define their pursuit vehicle specifications for NGVs. (Ford's contact is John Lapetz, who can be reached at 313-337-5636.)

PRD Warning

By Dick Hug, Vehicle Service Manager

The Natural Gas Vehicle Coalition (NGVC) has reported failures of the newest Mirada Generation 2.5 pressure relief devices (PRDs) in buses in the United States. The Gas Research Institute (GRI) and Mirada are attempting to ascertain reasons for the mechanism failures.

Initial findings point to water accumulating and subsequently freezing in the vent tubes attached to the PRDs (which are designed to direct potential gas releases upward from the buses).

All PRD vent tubes should have been originally equipped with caps to prevent moisture and contaminants from entering the vent tubes. During regular use and service, however, it appears these vent tube caps occasionally may get dislodged.

It is *imperative* that these caps remain in place to prevent contamination, freezing and potential failure of PRDs in use.

The NGVC Technology Committee recommends fleets make sure that their natural gas vehicles with PRD vent tubes are not accumulating water or contaminants. It is very important that if a fleet finds a vent tube that does not have a cap in place to confirm that the vent tube is empty and clean before replacing the cap.

Although to date the reported failures only have occurred on transit buses with Mirada

continued on back page

INSIDE THIS ISSUE

Non-Road Vehicle Emission Regulations, Part I

By Bill Vernon, Vehicle & Engine Group Manager

Before the Clean Air Act Amendments of 1990 came along, few regulations affected emissions by non-road vehicles other than the Occupational Safety and Health Administration's (OSHA's) air contaminant standards for certain workplaces.

That is not the case today, however. The U.S. Environmental Protection Agency (EPA) enforces emission standards on certain compression and spark-ignition engines used in non-road applications, and may be required to develop additional standards, while OSHA is expected to introduce new standards sometime in the near future.

Each of these initiatives could provide the impetus for more non-road fleets to become involved in alternative fuels such as natural gas. This article, the first in a two-part series, discusses some of these initiatives in detail.

The Clean Air Act required EPA to study emissions from non-road vehicles and engines to determine their impact on air quality. The agency was authorized to establish standards for non-road vehicle and engine classes generating air pollutants that are "reasonably anticipated to endanger public health or welfare."

In 1995, EPA finalized rules for emissions from non-road compression-ignition engines with a gross power output of 37 kilowatts (equivalent to about 50 horsepower) and more. The regulations cover new engines/vehicles beginning with model year 1996. The standards regulate emissions of such pollutants as hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NO_X), particulate matter (PM) and smoke. EPA is preparing to tighten the standards for two of the three classes of engines covered by this regulation to conform with similar regulations by the European Community.

Meanwhile, EPA also has created emission standards for spark-ignited engines with a gross power output at or below 19 kilowatts (about 25 horsepower). Regulation of these types of small engines is segmented into five classes based on ccm displacement. For non-handheld applications, standards are in place for HC and NO_X (combined) and CO. Standards for handheld applications address HC, CO and NO_X separately. All emissions from non-road engines, whether compression or spark ignition, are measured in terms of grams per kilowatt-hour.

No regulations exist for emissions from large spark ignition engines. However, officials at EPA recently stated that there are plans in the works to bring the industry and others together with EPA to work out a statement of principals (SOP) for such standards. A similar process was used by EPA to develop the emission standards for the large compression ignition nonroad engines. A notice of proposed rulemaking is expected from EPA on the large spark ignition engines in the next few years.

Additionally, engine manufacturers joined EPA and others last fall in signing an SOP that calls for additional exhaust emission reductions from forklifts, farm tractors, road construction vehicles and earth moving equipment. As part of the SOP, EPA will also propose an optional set of low-level emission standards to encourage the use of clean fuels for such vehicles.

Check this space in August's *Natural News* to find out more about the development of OSHA and other codes/standards used in non-road applications. These rules could have a bearing on your business!

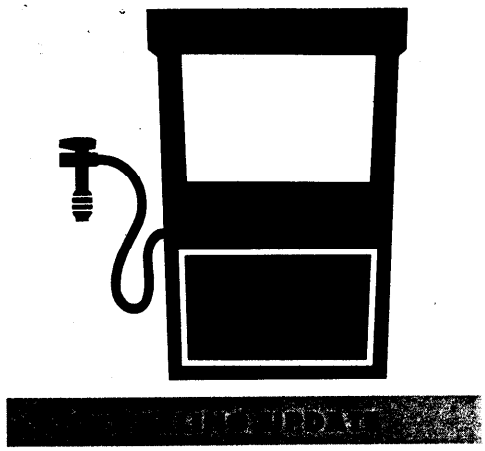
Non-Road OEM Natural Gas Vehicles
Model Year 1997

Manufacturer	Description	Models	Engines	OEM Contact
Clark Material Handling	Lift Truck	GCS, GPS, GCX, GPH, C500Y	Mitsubishi, Perkins, Ford	Jim Kauppi, 606/288-1823
Yale Materials Handling	Lift Truck	GP40 - 110, GC40 - 120	Mazda and GM Vortec	Warren Eck, 908/788-3269
Daewoo Lift Truck	Lift Truck	G35	GM Vortec 85 hp	Bill Butler, 216/595-5628
Tug Manufacturing	Baggage Tractor	MA, M1, MH, 660 Beltloader	Ford 4.0L	Brad Compton, 800/989-8499
Elgin Sweeper Co.	Street Sweeper	Series E & F	Cummins 5.9G	Annette Adams, 847/741-5370, x255
Morrison Knudson	Locomotive	Yard Switcher	Caterpillar 3516	Brian Marty, 412/237-2250, x117

Note: Caterpillar lift truck models GC 12, 18, 20, 25 and 30 and many other non-road vehicles can be converted to operate on natural gas to meet emission standards.

Used NGV Offerings

- *One 1997 Ford Crown Victoria LX (emerald green)*
- *Three Collins Shuttle Buses with GFI Conversion (Ford 460 engine, E-350 chassis, 24' in length and 18-passenger capacity)*
- *One 1992 Honda Accord with ANGI natural gas fuel system* • ***Call Natural Fuels Corporation for details.***



Municipality Fuels On-Site

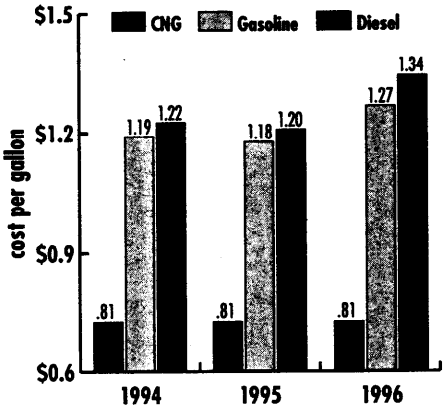
By Kim McKenzie, Fueling Services Manager

The city of Englewood has proven that private on-site compressed natural gas (CNG) fueling can be a viable option for fleets. Its facility on South Platte River Drive is one of the oldest CNG fueling sites in Colorado, installed in the early 1980s in response to skyrocketing gasoline prices, allowing the municipality to realize thousands of dollars in fuel cost savings.

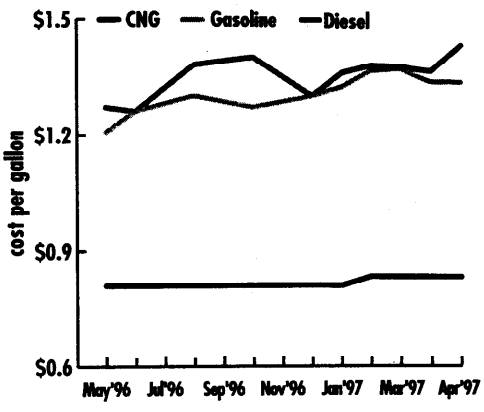
Today the city fills 36 bifuel vehicles at this site, from light-duty pickups to medium-duty dump trucks. Pat White, fleet administrator for the city, says planning is the key to a successful NGV program. "Our fleet operation has implemented a five-year plan that defines where we want to be at certain stages. This way we can plan and budget for all expenditures."

Last fall, White upgraded the site's compression capacity. Then earlier this year he placed an order for three Ford dedicated NGVs. Says White, "We want to be proactive and well-prepared when '98 rolls around." (That's the year Clean Air Act/Requirement 17 mandates begin for fleets of 10 or more vehicles.)

Retail Natural Gas, Gasoline & Diesel Prices



Retail Prices



Source: Total Station, 58th & I-25, Denver

CNG provides the city with a virtually transparent operation and favorable fueling economics. Fuel measurement is seamless, linking mass flowmeters to a card-lock system tied directly into a fuel management system. Natural gas costs the city 44 cents per equivalent gallon compared to 83 cents for gasoline and 79 cents for diesel. The internal service fund resells the natural gas for 69 cents a gallon, allocating a portion of the profits to cover the cost of compression, electricity and maintaining the fuel island.

White says the fleet's CNG experience has been very positive and he sees a long-term commitment by the city to NGVs. Exceptional buy-in from drivers has many of them utilizing CNG 80 to 90 percent of the time. In addition, drivers appreciate the fact that they are playing an influential role in improving the city's air quality. ●

Fuel Users Alert

The Colorado fuel tax decal for natural gas vehicles must be purchased now for 1997. Government and non-profit organizations receive the decal free. For others, the decal costs between $70 and $125 and is in lieu of the $.205 per gallon fuel tax. Call NFC or Department of Revenue, Motor Carrier Division at 303/232-2451 for more information or to purchase the decal.

Natural Gas Fueling Network (Colorado and South Wyoming)

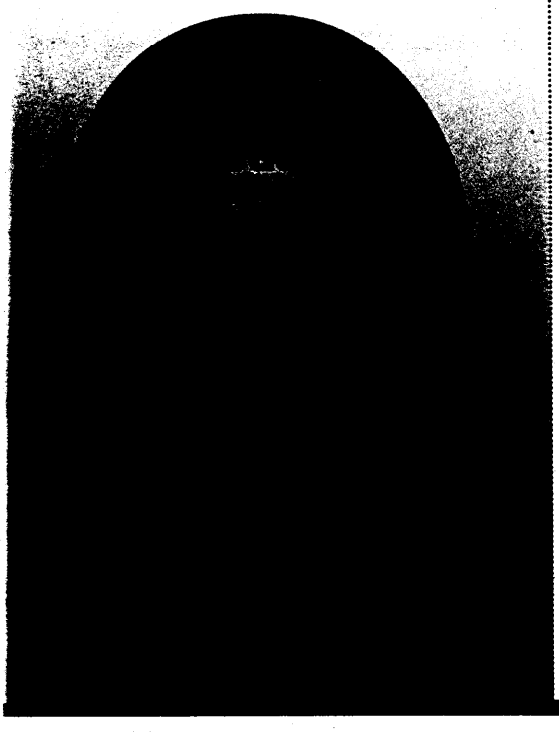
Public Sites: 30 *Private Sites:* 20

Fuel Makers: 25 (new unit at World Ice Arena)

New public-access sites: none

Site upgrades: The NATURAL-brand fueling site at 5855 Stapleton Drive N. (Denver) received additional CNG storage capacity to provide a full fill @ 3,000 psi for back-to-back fueling of vehicles.

Site profile: NATURAL-brand site at Colorado Springs Utilities (Colo. Ave & Conejos). *Top five fuel customers:* U.S. General Services Admin., City of Colorado Springs, Pike's Peak Library, Olson Plumbing & Heating, Peterson Air Force Base.



Capturing Fuel Cost Savings

Part II

By Ken Manley, Market Manager

At a cost of about 85 cents per equivalent gallon (or less for tax-exempt fleets), significantly lower than both gasoline and diesel prices, natural gas can bring substantial fuel cost savings to a fleet operation. But as I discussed in the first part of this article in last month's edition of *Natural News*, capturing these savings is a process that involves daily monitoring of vehicle routes, natural gas vehicle (NGV) driveability, natural gas fueling station performance and driver acceptance.

This article explores how fueling station performance and driver acceptance have a bearing on fuel cost savings. Shutting down a fueling site even temporarily can bring an NGV operation to a grinding halt. If a natural gas fueling station is not performing properly (low-pressure fueling, card reader problems, etc.) call NFC immediately. We have 24-hour-a-day maintenance crews on call to repair fueling station problems. NFC's "1-800" number for 24-hour service is posted at all fueling locations. Encourage your drivers to call us directly.

Another key to exploiting the cost savings associated with natural gas as a vehicle fuel is making sure drivers understand the equipment they are operating. That means answering concerns about safety, vehicle/fueling operation, bad prior NGV experiences and other issues.

The 1997 driver campaign (explained in detail on page three of last month's *Natural News*) is designed to educate and reward your drivers for using natural gas. This program also makes NFC personnel available to ride with your drivers for a day to understand their problems first-hand. I encourage you to call John Gonzales at NFC to take advantage of this program.

Even when all four major cost-savings factors named above are addressed, some drivers will choose not to use natural gas because it's different and it's human nature to resist change. In these cases, some fleets employ key-lock natural gas/gasoline switch or lock the gasoline cap on bifuel vehicles. Some have even chosen a mono-fuel (natural gas only) configuration for their NGVs.

All natural gas fueling locations are accessible with the NATURAL fueling card, which also allows fleet managers to generate vehicle- or driver -specific fuel use reports each month. Let us at NFC know if you want to develop a unique fuel cost savings maximization plan.

Alternative Fuels Rebate

Contact Kathy Drew at COGA (Colorado Oil and Gas Association, 303/861-0362) for copies of the rebate application and other questions pertaining to natural gas vehicle rebates. Rebate program application of the month: United Airlines 1997 Ford 5.8L pickup conversion with a GFI fuel system.

Tech Bulletin continued from front page

Generation 2.5 PRDs, keep in mind any type of PRD in any vehicle that has a vent tube exposed to the environment should be protected from potential contamination. For example, all sedans and vans with CNG fuel tanks mounted inside of the vehicle have PRD vent lines.

Please call me with any questions or for service support.

For additional information you may also contact Sean Turner at the Natural Gas Vehicle Coalition (703/527-3022).

NATURAL FUELS CORP. CONTACTS

Our business hours are 7:30 a.m. to 5:00 p.m. M.S.T. You can leave a message after hours. We offer emergency response for vehicle or fueling problems 24 hours a day with our mobile crews.
Curt Dallinger, General Manager & EVP, ext. 216
Paul Nelson, Vice President, Marketing, ext. 212
John Gonzales, Customer Satisfaction Manager, ext. 230
Jeff Frasier, Market Manager, ext. 213
Ken Manley, Market Manager, ext. 208
Allison Darling, Market Manager, ext. 235
Kim McKenzie, Fueling Services Manager, ext. 205
Bill Vernon, Vehicle Operations Manager, ext. 219
Dick Hug, Vehicle Service Manager, ext. 220
Ted McCabe, Fueling Sites Maintenance Manager, ext. 223

 Natural News is published monthly by RP Publishing Inc. NFC is a company engaged in the natural gas vehicle and fueling business. Its products include over 30 public-access fueling facilities in and around Colorado, on-site fueling, vehicle conversions, natural gas vehicle warranty and service, heavy-duty vehicle up-fit support, OEM vehicle support, vehicle parts and technical support/training, fueling facility equipment, and fueling site maintenance services.

Natural Fuels Corporation
5855 Stapleton Drive North • Denver, CO 80216-3312
303/322-4600 • 800/366-4602 • 303/322-4644 (fax)
info@naturalfuels.com

NATURAL.

NATURAL FUELS CORPORATION
5855 Stapleton Drive North
Denver, CO 80216-3312

Forwarding & Address Correction Requested

Tear along perforation lines and mail it in -- no postage necessary

What is your acceptable vehicle capital payback period? .....

.....

Check here if you want information on:
- ☐ OSHA Indoor Air Quality Regulations
- ☐ Non-Road Engines/Vehicle EPA Emission Standards/Regulations
- ☐ NFC Vehicle or Fueling Products/Services Information: .....

Bulk Rate
US Postage
PAID
Permit #1278
Denver, CO